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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,026	06/25/2003	Robert S. Bridges	88-2035A	3946

24114 7590 09/08/2004

LYONDELL CHEMICAL COMPANY
3801 WEST CHESTER PIKE
NEWTOWN SQUARE, PA 19073

EXAMINER

DANG, THUAN D

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,026

Applicant(s)

BRIDGES ET AL.

Examiner

Thuan D. Dang

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/12/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4, 5, 8-10, 12, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Commereuc et al (6,743,958) herein after “Com”.

Com discloses a process for production of propylene from a feedstock containing butane-1, butene-2, isobutylene, butadiene, and vinyl acetylenes including a step of selective hydrogenation of diolefins and acetylenes to butenes with isomerization of butene-1 to butene-2, a step of distillation of the product of the selective/hydrogenation and isomerization step into an overhead containing isobutene and butane-1 and a bottom containing butane-2 and butane, a step of skeletal isomerization of isobutene in the overhead to produce a product containing butanes a portion of which is recycled to the step of selective hydrogenation/isomerization, and a step of metathesis of the bottom with ethylene in a metathesis to produce propylene (the abstract; the figure; col. 1, line 65 thru col. 2, line 24; table 1).

The condition of the combination zone is disclosed by Com on column 3, lines 32-45.

The condition of the skeletal isomerization is disclosed by Com on column 4, lines 38-44.

The catalyst recited claim 9 is not different from the catalyst used by Com (the paragraph bridging column 2 and 3; also see page 11 of the specification).

The paragraph bridging columns 4 and 5 discloses the catalyst recited in claim 10.

The metathesis product also contains other olefins other than propylene.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

Art Unit: 1764

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 3, 6, 7, 11, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Commereuc et al (6,743,958) herein after "Com".

Com discloses a process as discussed above.

Com does not disclose (1) unreacted internal linear olefins, namely butene-2 recovered from metathesis is recovered in the distillation column and recycled to the metathesis, (2) the condition of the distillation and the metathesis reaction, and (3) the pore size of the skeletal isomerization catalyst, (see the entire patent for details).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Com process by recycling any unreacted butene-2 in the metathesis effluent (see table 1) which can be recovered distillation zone 2 to arrive at the applicants' claimed process to reduce the cost of material.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Com process by selecting appropriate conditions for the distillation column and the metathesis to arrive at the applicants' claimed process since it is expected that using any condition would yield similar results.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Com process by using an skeletal-isomerization zeolitic catalyst having a pore size as called for in the claim (col. 4, lines 19-30) since it using any one-dimension zeolite as the skeletal isomerization catalyst would yield similar result.

Art Unit: 1764

Claims 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Commereuc et al (6,743,958) herein after "Com" in view of Crossland et al (5,157,196).

Com discloses a process as discussed above.

Crossland does not disclose that purge stream 9 (see table 1) is further used for production of isooctane. However, Crossland discloses that isooctane is the most desirable component is the alkylate gasoline which can be produced by alkylation (col. 1, lines 11-25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Com process by alkylating the purge stream to increase the profit of the Com process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan D. Dang whose telephone number is 571-272-1445. The examiner can normally be reached on Mon-Thu.

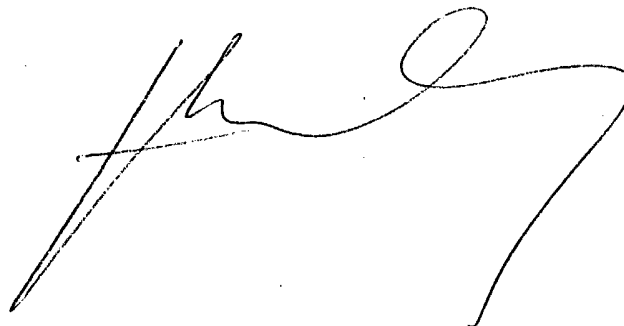
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1764

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thuan D. Dang
Primary Examiner
Art Unit 1764

10606026.20040907
September 7, 2004

A handwritten signature in black ink, appearing to be 'Thuan D. Dang', written in a cursive style with a large loop at the end.